

Notice of Allowability	Application No.	Applicant(s)	
	10/665,634	GRAY, CHARLES L.	
	Examiner	Art Unit	
	Thai-Ba Trieu	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the Amendment filed on 08/11/2005.
2. ☒ The allowed claim(s) is/are 1-21.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date <u>08/11/05</u> 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____. |
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DETAILED ACTION

This Office Action is in response to the Amendment filed August 11, 2005. Applicant's cooperation in correcting the informalities in the drawing and abstract is appreciated.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Applicant agreed with and authorized the changes to the specification and to claim 8 as stated by the examiner at pages 3 and 4 of the office action, mailed on June 16, 2005.

The application has been amended as follows:

1. IN THE SPECIFICATION:

- On Page 2, line 13, "**application number 10/241,229**" has been replaced by – **application number 10/214, 229** – (*for correcting typo error*).
- On Page 4, line 19, "**U.S. Patent No. 5,523,529**" has been replaced by – **U.S. Patent No. 6,523,529** – (*for correcting typo error*).
- On Page 13, line 20, line 20, Page 16, lines 2 and 6, "**compressor motor 27**" has been replaced by – **expander motor 27** – (*for consistency*).

2. IN THE CLAIMS:

- In claim 8, line 4, ***“if necessary”*** has been deleted (*for addressing a rejection 112, second paragraph*).

Allowable Subject Matter

The following is an examiner's statement of reasons for allowance: the prior art fails to disclose or render obvious the claimed combination of a method for combustion in a fuel combustion engine which utilizes late direct injection of fuel into a combustion chamber including:

“ Regarding claim 1:

maintaining oxygen concentration in a charge-air mixture for combustion within a desired oxygen concentration range;
directly injecting a quantity of fuel into the combustion chamber responsive to the determined boost pressure of the compressed charge-air mixture; and
combusting the fuel and charge-air mixture in the combustion chamber.

Regarding claim 8:

combining recirculated exhaust gas with ambient air to form a charge-air mixture;
adjusting the oxygen concentration of the charge-air mixture, if necessary, to fall within a desired oxygen concentration range;
determining a desired quantity of fuel for combustion corresponding to the determined charge-air boost pressure of the compressed charge-air mixture;
injecting the desired quantity of fuel directly into the engine cylinder;
and
combusting the fuel and charge-air mixture within the engine cylinder.

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Regarding claim 14:

(1) make adjustments to said exhaust gas recirculation system to control the oxygen concentration of the charge-air mixture to within a target range;

(2) make adjustments to said Most system to control the boost pressure of the charge-air mixture responsive to a demand for power from the engine; and

(3) regulate the amount of fuel injected into each cylinder responsive to the boost pressure of the charge-air mixture.”

Conclusion

The IDS (PTO-1449) filed on August 11, 2005 has been considered. An initialized copy is attached hereto.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (571) 272-4867. The examiner can normally be reached on Monday - Thursday (6:30-5:00).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB
October 10, 2005


Thai-Ba Trieu
Primary Examiner
Art Unit 3748

REPLACEMENT SHEET

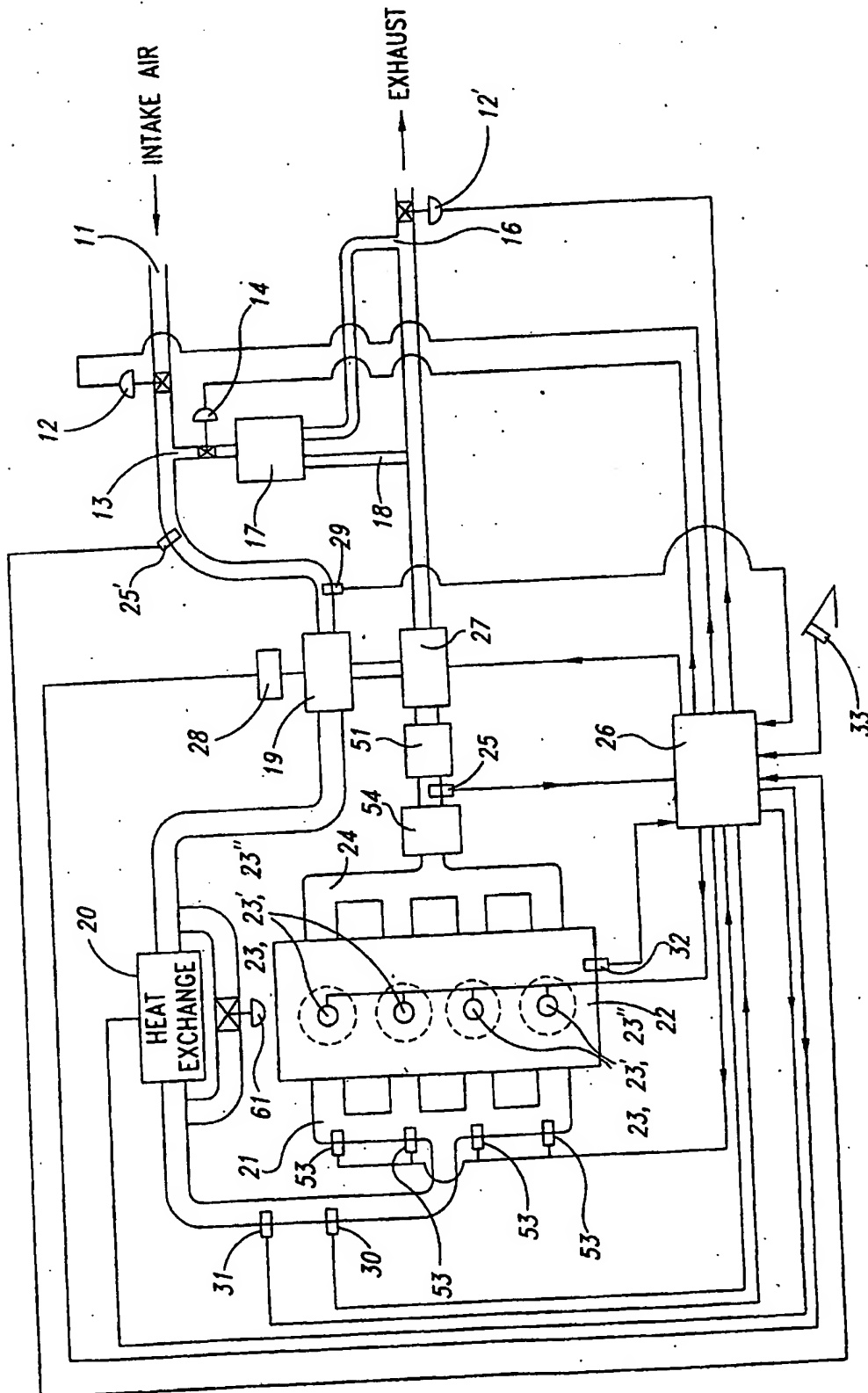


FIG. 1